REMARKS

Claims 20, 28, 31, 33-35, 38, 40-42, 45, 47-50, 53 and 55-60 are pending, with claims 20, 34, 41 and 49 being independent. Claims 20, 34, 41 and 49 have been amended; claims 29, 30, 36, 37, 43, 44, 51 and 52 have been cancelled; and claims 57-60 have been added. In particular, each of claims 20, 34, 41 and 49 has been amended to recite that the first layer is an alloy of aluminum and an element belonging to one of groups 12 to 15, and that the element belonging to one of groups 12 to 15 is at least one selected from the group consisting of germanium, tin, gallium, zinc, lead, indium, and antimony. Support for this amendment can be found in the application specification at least at page 19, lines 15-20 and Fig. 13B, and in previously pending dependent claims 29, 30, 36 and 37, now cancelled. Each of claims 20 and 34 has also been amended to recite that the semiconductor layer includes a source region and that the contact hole is formed over the source region. Support for this amendment can be found in the application specification at least at Figs. 3A-3C. Support for new claims 57-60 can be found in the application specification at least at page 9, lines 24 and 25. No new matter has been introduced.

Independent claims 20 and 34, and their dependent claims 28, 31, 35 and 38, have been rejected as being unpatentable over Kudoh (U.S. Patent no. 5,159,416) in view of Hollinger (U.S. Patent No. 5,089,434). Independent claims 20 and 34, and their dependent claims 28, 31, 35 and 38, also have been rejected as being unpatentable over Hollinger in view of Kudoh. Dependent claims 33 and 40, which depend from claims 20 and 34, respectively, have been rejected as being unpatentable over Kodoh in view of Hollinger and Applicant Admitted Prior Art (AAPA).

Each of independent claims 20 and 34 has been amended to recite that the first layer is an alloy of aluminum and an element belonging to one of groups 12 to 15, and that the element belonging to one of groups 12 to 15 is at least one selected from the group consisting of germanium, tin, gallium, zinc, lead, indium, and antimony. Applicants request reconsideration and withdrawal of the rejection of claims 20 and 34, and their dependent claims, because neither Kudoh, Hollinger, AAPA, nor any proper combination of the three describes or suggests these features.

Kudoh describes a thin film transistor having a Schottky barrier that includes a silicide layer 15, which the Examiner equates to the recited first layer. Kudoh, however, does not

describe or suggest that layer 15 is formed of an alloy of aluminum and at least one element selected from the group consisting of germanium, tin, gallium, zinc, lead, indium and antimony. Rather, Kudoh describes layer 15 as being a silicide film formed using "metals such as platinum, tungsten and molybdenum." See Kudoh at col. 3, lines 31 and 32.

Hollinger describes a power MOS field-effect transistor that includes a source structure 16 composed of a source contact layer 28, which the Examiner apparently equates to the recited first layer. Hollinger, however, does not describe or suggest that source structure 16 or source contact layer 28 is formed of an alloy of aluminum and at least one element selected from the group consisting of germanium, tin, gallium, zinc, lead, indium and antimony. Rather, Hollinger describes the source structure 16 and source contact layer 28 as being formed of "aluminum, although other materials such as tungsten may also be used." See Hollinger at col. 4, lines 50-53. AAPA, which is relied upon by the Examiner solely to disclose use of a thin film device as an active matrix type EL display device, also fails to describe or suggest the above-noted features.

For at least these reasons, applicants request reconsideration and withdrawal of the rejections of claims 20 and 34, and their dependent claims.

Independent claims 41 and 49, and their dependent claims 42-45, 47, 50-53 and 55, have been rejected as being unpatentable over Kudoh in view of Miyakawa. Dependent claims 48 and 56, which depend from claims 41 and 49, respectively, have been rejected as being unpatentable over Kudoh in view of Miyakawa and AAPA.

Independent claim 41 recites that a part of the second layer is located directly over the interlayer insulating film, and independent claim 49 recites that a part of the second layer and a part of the fourth layer are located directly over the interlayer insulating film. Applicants request reconsideration and withdrawal of the rejection of claims 41 and 49, and their dependent claims, because neither Kudoh, Miyakawa, AAPA, nor any proper combination of the three describes or suggests these features.

On page 11 of the Final Office Action, the Examiner acknowledges that Kudoh fails to describe or suggest these features and turns to Miyakawa to remedy this deficiency of Kudoh:

> Kudoh does not teach a part of the second and fourth layers located directly over the interlayer insulating film. That is, Kudoh does not teach forming the first layer as a lamination of two layers, such that part of the second and fourth layers are located directly over the interlayer insulating film.
> Miyakawa teaches in figure 7 and related text forming the first layer as a lamination of two layers Ti/TiN. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the first layer as a lamination of two layers in Kudoh's device, such that part of the second and fourth layers are located directly over the interlayer insulating film, in order to improve device characteristics by using barrier layers, as is well known in the art.

Accordingly, as best understood, the Examiner is asserting that a person of ordinary skill in the art would have modified Kudoh's TFT structure in view of Miyakawa's teachings by changing Kudoh's silicide layer 15, which the Examiner equates to the recited first layer, to a lamination of Ti/TiN per Miyakawa's teachings "in order to improve device characteristics by using barrier layers."

Applicants submit that a person of ordinary skill in the art would not have modified Kudoh's TFT structure in the manner contemplated by the Examiner because such a modification would destroy the ability of Kudoh's TFT structure to be used for its disclosed purpose. Specifically, Kudoh describes that using TFTs in static random access memory (SRAM) cells requires an improvement in TFT characteristics, such as a reduction in leakage current and series resistance. See col. 1, lines 19-29. Kudoh asserts that past attempts to improve TFT characteristics have been problematic in that they have introduced additional manufacturing steps and have restricted the memory capacity of SRAMs that use TFTs. See col. 1, lines 30-40. Kudoh discloses a TFT structure that leverages a Schottky barrier to achieve the improved TFT characteristics necessary for use in SRAM cells.

That is, Kudoh's TFT structure, as stated in the very title of the application "Thin-Film Transistor Having a Schottky Barrier," relies on use of a Schottky barrier that is formed through use of a metal silicide film to obtain the improved TFT characteristics: "A semiconductor device according to the present invention includes ... at least one metal silicide film provided on the silicon thin film to form a Schottky barrier therebetween, a source, and a drain, the metal silicide film constituting at least one of the source and drain such that the Schottky barrier provides a junction between the one of the source and drain and the substrate area. Thus, TFT according to the present invention has at least one of the source and drain composed of the silicide film and defined by the Schottky barrier" (emphasis added). See col. 1, lines 58-67. In fact, the Schottky barrier in Kudoh's device is critical in allowing the device to achieve the reduced leakage current

and series resistance necessary for SRAM applications. See, e.g., col. 1 lines 19-26, 43-49 and col. 3, lines 19-30.

The modification of Kudoh's device contemplated by the Examiner is to replace the silicide layer 15 of Kudoh's device with a lamination of Ti/TiN. Such a modification, however, would destroy the Schottky barrier of Kudoh's device and thereby prevent Kudoh's device from achieving the improved TFT characteristics necessary for use in SRAM applications, which is the very purpose disclosed for Kudoh's device. In particular, as suggested in the description in the embodiment 2 section of the present application, the replacement of a silicide layer with a Titanium layer, as suggested by the Examiner, would result in formation of a good ohmic contact with the underlying silicon, rather than formation of a Schottky barrier. Accordingly, such a modification would prevent the use of Kudoh's device for its disclosed purpose, and, therefore, applicants submit that a person of ordinary skill in the art would not have modified Kudoh's TFT structure in the manner asserted by the Examiner. AAPA, which is relied upon by the Examiner solely to disclose use of a thin film device as an active matrix type EL display device, also fails to describe or suggest the above-noted feature.

For at least these reasons, applicants request reconsideration and withdrawal of the rejection of claims 41 and 49, and their dependent claims.

Applicants submit that all claims are in condition for allowance.

The fees in the amount of $810 in payment of the request for continuation examination are being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: February 25, 2009

Hussein Akhavannik
Reg. No. 59,347

Roberto J. Devoto
Reg. No. 55,108

Fish & Richardson P.C.
1425 K Street, N.W.
11th Floor
Washington, DC 20005-3500
Telephone: (202) 783-5070
Facsimile: (877) 769-7945